

Claims

1. An injector for a common rail injection system of an internal combustion engine, having an injector housing, a valve element disposed in the injector housing, a sealing ring acting as a seal between a high-pressure region and a low-pressure region of the injector, and a support ring, disposed together with the sealing ring in an annular chamber between the injector housing and the valve element, for bracing the sealing ring, which is provided, in its underside remote from the sealing ring, with a plurality of relief grooves spaced apart in the circumferential direction and, in its outer circumferential edge, with a plurality of recesses spaced apart in the circumferential direction, characterized in that the relief grooves (36) and the recesses (34) are disposed in offset fashion in the circumferential direction.
2. The injector as defined by claim 1, characterized in that one recess (34) each is located between two relief grooves (36) adjacent to one another in the circumferential direction.
3. The injector as defined by claim 2, characterized in that the recess (34) is disposed in the middle between the adjacent relief grooves (36).
4. The injector as defined by one of the foregoing claims, characterized in that one relief groove (36) each is disposed between two recesses (34) adjacent to one another in the circumferential direction.

5. The injector as defined by claim 4, characterized in that the relief groove (36) is disposed in the middle between the adjacent recesses (34).
6. The injector as defined by one of the foregoing claims, characterized in that the recesses (34) and the relief grooves (36) are each spaced apart from one another at equal angular spacings.
7. The injector as defined by one of the foregoing claims, characterized in that the support ring has four relief grooves (36) and four recesses (34), and the recesses (34) are disposed at a spacing of 45° from the relief grooves (36).
8. The injector as defined by one of the foregoing claims, characterized in that the support ring (24) comprises a substantially axial support ring part (26) and a substantially radial support ring part (30), which is provided with the relief grooves (36) in its underside remote from the sealing ring (22) and with the recesses (34) in its outer circumferential edge (28).
9. The injector as defined by one of the foregoing claims, characterized in that the support ring (24) is braced against an annular shoulder (14) of the injector housing (4), whose cross-sectional shape is adapted to the cross-sectional shape of the support ring (24) in such a way that with its outer circumferential edge (28), the support ring rests essentially sealingly between the recesses (34) against the injector housing (4) above the annular shoulder (14), and with parts (42) of its underside, the support ring rests sealingly against the annular shoulder (14) between the relief grooves (36), and the parts (42) that rest sealingly are

oriented toward the valve element (8) and do not extend over the full width of the support ring (24).

10. A common rail injection system, characterized by at least one injector (2) as defined by one of the foregoing claims.